

IN-DEPTH REPORT

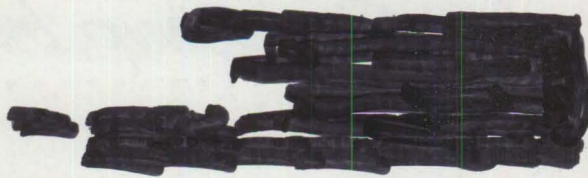
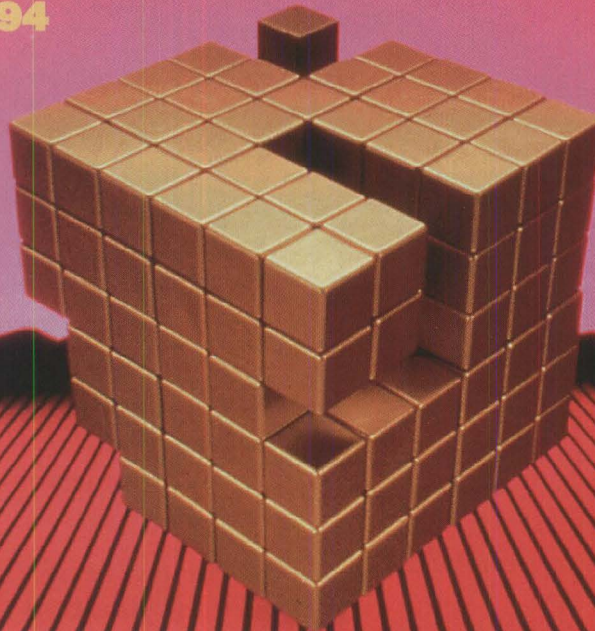
COMPUTING SOLUTIONS

VOLUME 2 • NUMBER 1 • FEBRUARY 1994

NaSTEC 6.0

**Evolving Today;
Excelling Tomorrow**

**March 13-16, 1994
Orlando, FL**



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FROM THE VICE PRESIDENT

Dear Member,



As I glance outside it is snowing. Many of you living in warmer geographic regions probably have not experienced, in person, the beauty of gently falling snow. For those of us in the Milwaukee, Wis. area, at this time of year, snow is "welcome." Normally, the snow is piled high, but this is our first snow and it is only a dusting; not the really wet stuff snowmen (women) are made from.

A Generation of Inspiration

Fortunately, the lack of snow hasn't dampened too many spirits as many outdoor enthusiasts, both young and old, received computer equipment, software and games as holiday gifts. For the young people, the tremendous breakthroughs in computing technology are exposing them to a vast array of opportunities earlier in their educational careers than ever before! Not only are today's youth experimenting with the entertainment value of the computer, they are also being "pulled" in by the computer's educational resources. It's amazing to think that a five-year old knows what Windows is or how to use a mouse!

Thanks to computing technology, young people now can "enjoy learning" about mathematics, engineering, science, history, English, etc. Have you viewed an educational CD-ROM recently? Phenomenal! The youth have resources available to them beyond belief! It's amazing to think what future technology will bring!

Our evolving computing industry needs educated talent. We need them to develop, engineer and certainly maintain this sophisticated equipment and supporting software. Practically every industry is utilizing computer technology. Our new scientists, whether they are developing new materials and products, finding cures for mysterious illnesses and diseases, or learning more about space travel and life beyond, rely on advanced computer technology. The world depends on its youth to step in and not only carry on, but to actually improve life for everyone.

NaSPA is here for you, the corporate computing technical professional, to assist you in learning more about solving today's technical problems. NaSPA will be here for the new breed, too, to assist them in developing solutions to their trials and tribulations. Let's help one another make it through the fast moving computing technological evolution. Whether you function as the key systems support person within a large mainframe-based data center for a mega-corporation, or you are the one-and-only network support technician for a smaller organization, NaSPA is here to help you.

Do not hesitate to dial into NaSCOM, NaSPA's 24-hour BBS and ask for assistance, or consider signing up for NaSTEC 6.0, NaSPA's annual technical conference, which is being held March 13-16 in Orlando. This year's conference topics are widespread and offer interesting sessions for everyone (see the ad and registration form on pages 41 and 42). NaSPA also offers discounts to many well-known educational firms, which include regional classes that offer outstanding tips, techniques, explanations and solutions to many of your day-to-day professional struggles and obstacles.

So, let's take this opportunity to forge ahead and learn about new technologies. Decide now how you will handle the emerging technologies. Ask your supervisor what you can help with or what new technology you can get your hands on. Seeing the youth of today with their computer intellect is an inspiration. Let that also be an inspiration to you to take on new challenges and evolve.

We hope to see you at NaSTEC. In the meantime, enjoy your outdoor or indoor winter activities.

Tom Sprague

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CONTENTS

FEBRUARY 1994

IN-DEPTH REPORT • COMPUTING SOLUTIONS

FEATURES

How To Obtain Co-Existence With OS/2 Communications Manager and the NetWare Requester

By John Johnston

16

Keeping The Internet Hacker Out of the Data Center

By Mark Bell

22

Management Won't Promote You? Promote Yourself!

By Greg Brown

28

Data Storage: Putting Data on the Right Medium at the Right Time

By Larry Walsh

31

Creative Solutions to Rightsizing Questions: Five Companies Share their Experiences

By Kristen Costello

34

Software Change and Configuration Management (CM) in Client/Server Environments

By Tom Burton

37

COLUMNS

Storage Management Issues & Answers

By Steve Pryor

40

Forcesight

By Stephen Force

44

DEPARTMENTS

Vice President's Letter

3

NaSPA News

6

Chapter Listing

11

NaSCOM Highlights

13

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How To Obtain Co-Existence With OS/2 Communications Manager and the NetWare Requester

By John Johnston

In this article, you will learn how to install and configure the NetWare Requester Version 2.0 and OS/2 Extended Services (Communications Manager) Version 1.0 so they can co-exist with each other. Co-existence, in this material, means that you will be able to access an IBM host via a Local Area Network (LAN) using the services of Communications Manager while, at the same time, be able to access NetWare services using a native OS/2 session or an OS/2 DOS compatibility box.

To accomplish this goal the following task must be performed:

- Check your NIC adapter for compatibility.
- Configure Communications Manager for host access.
- Install the NetWare Requester.
- Implement the ODINSUP driver.

NIC ADAPTER COMPATIBILITY

The selection of a NIC adapter for your workstations is a very important decision. You must choose a NIC that is supported by all of the networking applications that you plan to implement.

Extended Services/Communications Manager Version 1.0 supports and provides drivers for the following NIC adapters:

- 3Com 3C503 EtherLink II;
- 3Com 3C523 EtherLink/MC;
- IBM PC Network II and Baseband Adapter;
- IBM PC Network II/A and Baseband/A Adapters;
- IBM Token-Ring Network Adapters;
- IBM Token-Ring Network Busmaster Server Adapters;
- 3270 Adapter for 3174 Peer Communications;
- IBM PS/2 Adapter for Ethernet Networks;
- Western Digital EtherCard PLUS Adapters;
- Western Digital EtherCard PLUS Micro Channel Adapters;
- Ungermann-Bass NIUpc Adapters; and

FIGURE 1: SELECT OPTIONS FOR CONFIG.SYS

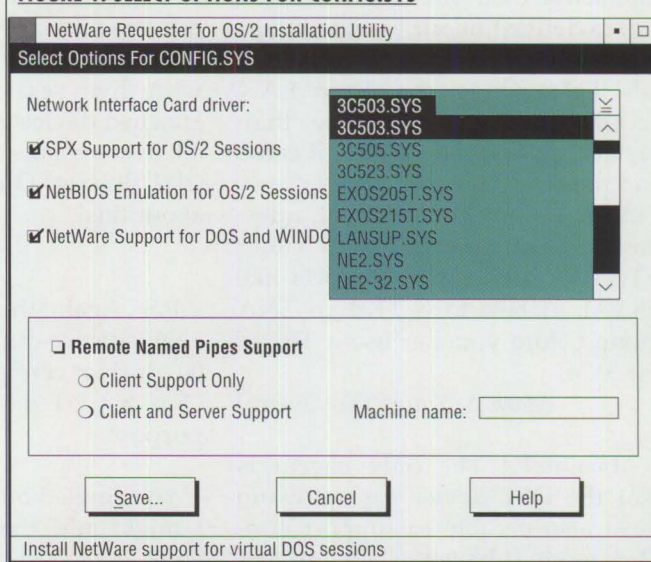
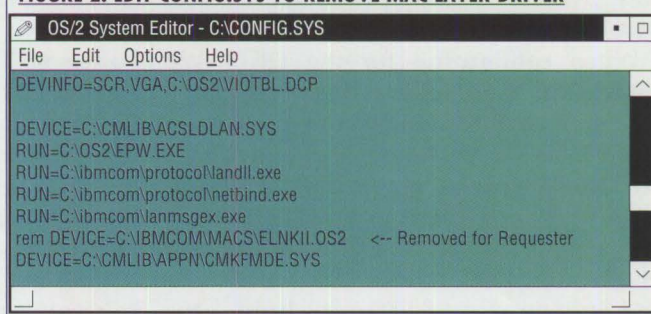


FIGURE 2: EDIT CONFIG.SYS TO REMOVE MAC LAYER DRIVER



- Ungermann-Bass NIUps Adapters.

The NetWare Requester supports and provides the following NIC drivers:

- 3C503.SYS;
- 3C505.SYS;
- 3C523.SYS;
- EXOS205T.SYS;

- EXOS215T.SYS;
- LANSUP.SYS;
- NE2.SYS;
- NE2-32.SYS;
- NE1000.SYS;
- NE1500T.SYS;
- NE2000.SYS;
- NE2100.SYS;
- NE3200.SYS;
- PCN2L.SYS;
- TOKEN.SYS;
- TRXNET.SYS; and
- TRXNET2.SYS.

To provide co-existence between Communications Manager and the NetWare Requester, you must choose an NIC that is supported by both products. If you review the two aforementioned lists of supported adapters, you will find there are only a few NICs that are common between the two. The 3Com 3C503 NICs are used in the examples provided in this article.

If you are using an NIC adapter that is not listed in the aforementioned lists, you should contact the manufacturer to obtain the drivers.

ESTABLISH COMMUNICATIONS MANAGER 3270 LINK

Before you implement the NetWare Requester, you should start with a workstation that already has Communication Manager configured and tested for host access. This will make trouble shooting much easier.

It does not matter what type of host access is configured. It can be Token-Ring or Ethernet DSPU access or LU access via an OS/2 gateway.

INSTALL THE OS/2 NETWARE REQUESTER

The OS/2 NetWare Requester can be obtained in a blue box from IBM or in a red box from Novell. The actual code for the Requester was written by Novell and is identical whether ordered from IBM or Novell. Novell also develops all of the corrective service and future release upgrades for the product.

Support of the OS/2 Requester is provided by both IBM and Novell. If you purchased the product from IBM you have access to the IBM support center for problem resolution. If you purchase the Requester from Novell you can obtain support via the Netware CompuServe forum or by calling Novell Technical Support. Keep in mind that each time you call Novell technical support you will be charged \$125.

The installation of the OS/2 Requester software is fairly simple, so let's get started.

Step 1: Open an OS/2 full-screen session. Insert the Requester diskette in drive A: and enter:

```
A:INSTALL
```

Step 2: When the OS/2 Installation Utility Menu appears, select "Installation —> Requester on Workstation".

FIGURE 3: EDIT CONFIG.SYS TO REPOSITION DRIVERS

```
OS/2 System Editor - C:\CONFIG.SYS
File Edit Options Help
DEVICE=C:\NETWARE\LSL.SYS
RUN=C:\NETWARE\DDAEMON.EXE
DEVICE=C:\NETWARE\3C503.SYS
DEVICE=C:\NETWARE\ODINSUP.SYS
DEVICE=C:\NETWARE\IPX.SYS
DEVICE=C:\NETWARE\SPX.SYS
RUN=C:\NETWARE\SPDAEMON.EXE
rem DEVICE=C:\NETWARE\NMPPE.SYS
rem DEVICE=C:\NETWARE\NPSERVER.SYS
```

FIGURE 4: EDIT NET.CFG TO ADD FRAME TYPES

```
OS/2 System Editor - c:\net.cfg
File Edit Options Help
Link Driver 3c503
  frame ethernet_802.3
  frame ethernet_ii
  frame ethernet_802.2
  frame ethernet_snap
Link Support
  buffers 20 1514
Protocol ODINSUP
  bind 3c503
```

FIGURE 5: EDIT PROTOCOL.INI TO ADD ODI DRIVER

```
OS/2 System Editor - C:\IBMCOM\PROTOCOL.INI
File Edit Options Help
[PROT_MAN]
  DRIVERNAME = PROTMAN$

[IBMLXCFG]
  LANDD_nif=LANDD.NIF
  ELNKII_nif=ELNKII.NIF

[LANDD_nif]
  DRIVERNAME = LANDD$
  BINDINGS = ELNKII_nif <--- Removed for Requester
  BINDINGS = X3C503
  Links = 41
  Users = 4
  Max_Saps = 4
  NetAddress = "T400020101AGF"

[ELNKII_nif]
  DRIVERNAME = ELNKIIS

[3C503]
```

Step 3: When the next panel appears, select "Edit CONFIG.SYS and Copy Files".

Step 4: The panel in Figure 1 will be displayed. This panel prompts you for the type of network support you require and for an NIC driver. The 3C503.SYS NIC driver was chosen for this example with the following support:

- SPX Support for OS/2 Sessions;
- NetBIOS Emulation for OS/2 Sessions; and
- NetWare Support for DOS and Windows.

Step 5: Next, you will be prompted for authorization to update CONFIG.SYS. Select "OK".

FIGURE 6: COMMUNICATIONS MANAGER ERROR MESSAGE

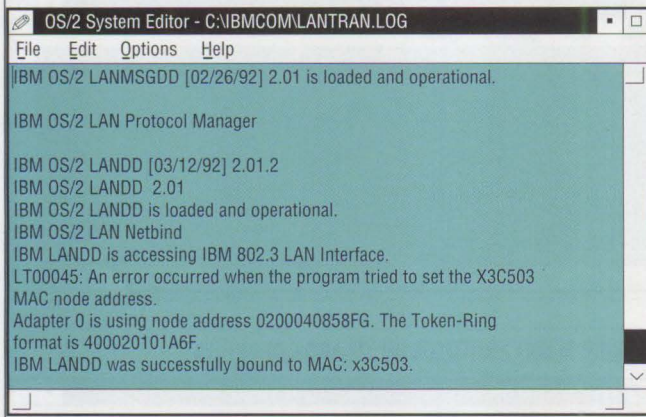
Originator: . . . : ETHERAND

Adapter 00 cannot access the CSMA/CD network due to an error during open: type 0000.

Note the message originator, number, date and time and Press Enter. Check the message log for additional messages.

ACSO658C

FIGURE 7: SAMPLE LANTRAN.LOG



Step 6: You will now be prompted for authorization to copy the files to the NETWARE directory. Select "Copy".

Step 7: Next, you will be asked if you want to put the Requester and its utilities in this folder. Select "Yes".

Step 8: The installation of the software is now complete. Exit from the Requester Installation Utility, but do not re-boot your system yet. We must make several modifications first.

IMPLEMENT THE ODINSUP DRIVER

Now that we have the Requester software installed, we need to implement the ODINSUP driver to provide co-existence between Communications Manager and the Requester.

There are three steps that are required to implement the ODINSUP driver:

- Modify CONFIG.SYS;
- Modify NET.CFG; and
- Modify PROTOCOL.INI.

MODIFYING CONFIG.SYS

We must make several changes to the OS/2 CONFIG.SYS file in order to implement the ODINSUP driver. To perform these modifications you can use any DOS editor through a DOS window or you can use the OS/2 System Editor provided by OS/2.

To access the OS/2 System Editor, open the OS/2

System icon. You will see a Productivity icon inside the System Folder. Double-click on the Productivity icon. Inside this folder you will see the OS/2 System Editor icon. Double-click on this icon to access the editor.

The OS/2 System Editor is fairly simple to use. To open a file, click on the File pull down menu. You will see a list of drives, directories and files. To navigate through these items, simply point to the directory, drive or file that you wish to update and double-click.

The following steps will guide you through the changes required to the CONFIG.SYS file to implement the ODINSUP driver.

Step 1: Comment out the statements in CONFIG.SYS that load the MAC level drivers. These can be identified by looking for the drivers that are loaded from C:\IBMCOM\MACS\xxxxx.xxx (see Figure 2). These statements should be near the end of the CONFIG.SYS file.

To comment out the driver, place the characters "REM " in front of the line.

Note: Whenever you modify your Communications Manager configuration, always check the CONFIG.SYS file for the MAC drivers. Even minor changes to your configuration will cause the MAC driver statements to be re-inserted into CONFIG.SYS.

Step 2: If you look in the *NetWare Requester for OS/2 V2.0* manual on page 6-3, step 4, it will tell you to add a line to load the ODINSUP.SYS driver after the PROTMAN.OS2 and LSL.SYS lines. The line to be added to CONFIG.SYS should look like this:

```
DEVICE=C:\NETWARE\ODINSUP.SYS
```

Note: The manual fails to tell you that you must load the ODINSUP driver after not only PROTMAN.OS2 and LSL.SYS, but also after the NDIS NIC driver. The line in CONFIG.SYS that loads the NDIS NIC driver can be located by looking for a line that looks like:

```
DEVICE=C:\NETWARE\XXXXX.SYS
```

Where xxxxx.SYS is replaced with the driver you selected in Step 4 of the Requester Software installation. See Figure 3.

Step 3: Save the CONFIG.SYS file.

MODIFY (OR CREATE) THE NET.CFG FILE

You must create or modify C:\NET.CFG for the Requester to operate properly. The lines you type into NET.CFG will vary depending on whether you are using a Token-Ring NIC or an Ethernet NIC adapter.

The NET.CFG is divided into three main sections: the Link Driver section, the Link Support section and the Protocol Option section.

THE LINK DRIVER SECTION

The Link Driver section is used to specify the various frame types used by your NIC adapter. If you are using an Ethernet NIC adapter you should specify all of the frame types shown in Figure 4.

If you are using a Token-Ring adapter, the following statements should be coded behind the Link Driver statement:

```
FRAME TOKEN-RING
FRAME TOKEN-RING_SNAP
```

The driver name on the first statement of the NET.CFG file must match the name specified in Step 2 of the aforementioned Modify CONFIG.SYS section.

THE LINK SUPPORT SECTION

The Link Support section is used to specify the number and size of the Link Support buffers. The default is **buffers 20 1514**.

THE PROTOCOL OPTION SECTION

This section is used to bind ODINSUP to the Ethernet or Token-Ring driver. To do this, simply code a bind statement after the Protocol ODINSUP statement. The name following the word bind must match the name specified on the Link Driver statement at the beginning of the NET.CFG file.

You should refer to page 6-5 of the *NetWare Requester for OS/2 V2.0* manual for a full explanation of the NET.CFG file.

MODIFY PROTOCOL.INI

The PROTOCOL.INI file must be modified to use the ODI driver defined in the NET.CFG file. This change will direct Communications Manager to use the ODINSUP driver.

The PROTOCOL.INI file resides in the C:\IBMCOM directory. Two changes must be made to PROTOCOL.INI (refer to the *NetWare Requester for OS/2 V2.0* manual page 6-8).

Step 1: Modify the "Bindings=" line by replacing the NDIS MAC driver name with the ODI driver name. See Figure 5. The Bindings= parameter was changed from BINDINGS=ELNKII_nif to BINDINGS=X3C503. You should place the name of the driver you selected during the installation into the Bindings statement.

Driver names in PROTOCOL.INI cannot begin with a number, so the 3C503 name was preceded with an "X".

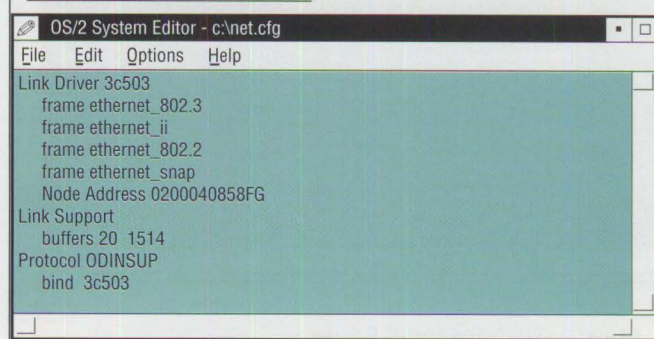
Step 2: You must now add a driver section at the end of the PROTOCOL.INI file. To do this you simply place the following line at the end of the file:

```
[xxxxxxx]
```

FIGURE 8: FORMULA TO CONVERT AN ETHERNET ADDRESS TO ITS CORRESPONDING TOKEN-RING ADDRESS FORMAT

0 TO 0	6 TO 6	C TO 3
1 TO 8	7 TO E	D TO B
2 TO 4	8 TO 1	E TO 7
3 TO C	9 TO 9	F TO F
4 TO 2	A TO 5	
5 TO A	B TO D	

FIGURE 9: ADD LAA TO NET.CFG



Where xxxxxx is replaced with the name of the driver you placed in the Bindings statement.

You must place a blank line after the previous statement.

You do not need to precede driver names that start with a number with an "X".

See Figure 5 for an example of modifying the PROTOCOL.INI for a 3C503 driver.

Step 3: Save the C:\IBMCOM\PROTOCOL.INI file.

TEST THE ODINSUP DRIVER

Now comes the moment of truth. It's time to re-boot your workstation. When you boot, watch very carefully for errors. When you boot, if you receive the error message illustrated in Figure 6, don't worry about it for now.

When your workstation finishes booting, you should see a "NETWORK" icon. If you see this icon, it means the Requester successfully connected to one or more NetWare servers on the network. If you did not get the NETWORK icon, you should correct the errors that caused it before continuing.

MODIFY THE DOS SETTINGS

To test the Requester, we will attempt to log in to your Novell file server from a DOS full-screen session. Before we do this we must make a couple of changes to the DOS Settings for the session.

Step 1: Open the DOS Settings for a DOS full-screen session. To do this, place the mouse cursor on the DOS Full-Screen icon and press the right button. Move the mouse cursor to the arrow beside the **Open** label. You will now see **Settings** and **Program**. Move the mouse cursor to **Settings** and click the left button.

Step 2: Click on the Session Tab.

CONVERTING THE LAA

You can use the following formula to convert an LAA from one format to the other.

Let's use the LAA of 400020101A6F as an example. To convert this address to the Ethernet format, we first break the address into two digit chunks as follows:

40 00 20 10 1A 6F

Next, we reverse the order of the digits in each two-digit chunks:

04 00 02 01 A1 F6

Now we replace each number with the corresponding number in the chart shown in Figure 8.

So the Ethernet format of the original address is:

02 00 04 08 58 F6

You can also use the formula in Figure 8 to convert an Ethernet address to its corresponding Token-Ring address format.

After converting your address, simply add the Node Address statement in the Link Driver section of your NET.CFG file as illustrated in Figure 9.

REMOVING THE NETADDRESS STATEMENT

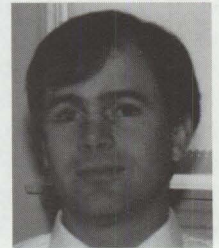
We must also remove the NetAddress statement in C:\IBMCOM\PROTOCOL.INI. To do this you can delete the Netaddress statement or simply comment it out using the '*' characters illustrated in Figure 10.

After modifying the NET.CFG and PROTOCOL.INI files, you are ready to shut down and re-boot your system. When the system comes back up you should be able to access your Novell network and the 3270 host concurrently. Co-existence!

/*

Was this article of value to you? If so, please let us know by circling Reader Service No. 31.

NaSPA member John Johnston is manager of Technical Support and Communications for a major hospital in Pennsylvania. John can be reached for comments or questions via NaSCOM. His user ID is Johnjohe.



NaSTEC 6.0

March 13-16, 1994
Orlando Marriott

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